

REMARKS

Claims 1-21 are pending. Claims 13, 14, 16, and 21 were amended herein. No claims were cancelled. Reconsideration to the rejections of all claims is requested.

I. Claim Objections

Claim 1 was objected to because it lacked a colon at the end of line 5 after the word "including." The applicant contends that no colon is required after the word "including" because only a single item is listed. The format of claim 1 has been changed herein to show the "including" term in the following paragraph. Accordingly, the objection has been overcome.

Claim 13 was objected to because the term "an model" was incorrect. In addition, a colon was missing in line 4. Claim 13 has been amended to overcome these problems.

Claim 14 was objected to because of punctuation and grammar errors. Claim 14 has been amended to overcome these errors.

Claim 16 was objected to because of punctuation and grammar errors. Claim 16 has been amended to overcome these errors.

Claim 19 was objected to because of a grammar error. Claim 19 has been amended to overcome this error.

Claim 21 was objected to because of a grammar error. Claim 21 has been amended to overcome this error.

II. Rejection of Claims 1-20 Under 35 U.S.C. §101

Claims 1-20 were rejected as being directed toward software or data. According to the office action, the claims do not produce any useful, concrete, and tangible result per 35 U.S.C.

§101. The applicants disagree with the holding in the office action. Software and related claims have been and are allowable per 35 U.S.C. §101. The applicants respectfully direct the examiner to the holdings in *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), and subsequent cases.

Based on the foregoing, the rejection of the claims based on 35 U.S.C. §101 has been overcome.

III. Rejection of Claims 1-3, 6-8, 11, and 14-21 Under 35 U.S.C. §102(b)

Claims 1-3, 6-8, 11, and 14-21 were rejected under 35 U.S.C. §102(b) as being anticipated by Whetsel (U.S. 6,519,729).

CLAIM 1

Claim 1 is printed as follows for convenience:

A tool for use in a process related to testing a circuit device, comprising:
code for identifying a respective parent portion and any respective branch portions of a scan chain of a circuit device, the scan chain having a scan input and one or more scan outputs and a plurality of scan cells disposed therebetween; and

code for creating a model of the scan chain, including code for creating a dummy cell chain which includes creating one or more dummy cells and connecting the one or more dummy cells between the scan input and a branch portion of the scan chain.

Some portions of claim 1 that are not disclosed by Whetsel have been printed above in bold type. In summary, Whetsel does not disclose the claimed branches. Reference is made to paragraphs 26 and 29 of the present application where a branch is described. The last portion of paragraph 26 describes a branch as follows:

Branch or stub chain **30** is connected to and branches off of the base or parent scan chain **20** and thereby provides an overall scan chain **200** with parallel parts which

will be described further below. The branching shown and described herein is the intended meaning of either branch or stub or other similar alternative descriptors, such as fork, or forked or Y-shaped, or the like.

There are no branches disclosed in Whetsel. Whetsel discloses breaking a scan path into separate and parallel scan paths. For example, column 3, lines 40-42 describe Fig. 2 as two separate scan paths. In order to keep the parallel path lengths the same, dummy cells may be added to a parallel path. These parallel paths and the dummy cells are described as follows at column 3, lines 46-57:

The scan paths 204 and 205 are produced by dividing the number of scan cells (L) in scan path 102 by two ($L/2$), such that the scan cell lengths of scan paths 204 and 205 are preferably one half the scan cell length of scan path 102. If the number of scan cells (L) in 102 is not equally divisible by 2, then scan paths 204 and 205 may not contain an exactly equal number of scan cells, i.e. one of the scan paths 204 or 205 may contain an additional remainder scan cell. If one scan path includes an additional remainder scan cell, a dummy scan cell may be added to the other scan path to equalize the length between both scan paths, if desired.

Simply splitting a scan path into separate parallel paths does not constitute branches as recited in claim 1. Without the branching element, Whetsel cannot disclose all the elements of claim 1 and cannot anticipate claim 1.

Based on the foregoing, the rejection of claim 1 has been overcome. The applicants request reconsideration of the rejection.

CLAIMS 2, 3, 6-8, AND 11

Claims 2, 3, 6-8, and 11 are dependent on claim 1 and are deemed allowable by way of their dependence and for other reasons. Therefore, the applicants request reconsideration of the rejections.

CLAIM 14

Claim 14 is printed as follows for convenience:

A tool for use in a test process for a circuit device comprising:
an electronic representation of a branched scan chain of the circuit device, **the branched scan chain having scan cells in a parent portion and a branched portion**, the branched portion branching off the parent portion;
whereby the electronic representation includes:
a representative parent portion of scan cells; and
a branched dummy portion of scan cells;
whereby the representative parent portion is an electronic representative of the scan cells of the parent portion of the branched scan chain of the circuit device;
and
whereby the branched dummy portion includes:
an electronic representative of the scan cells of the branched portion of the branched scan chain of the circuit device; and
one or more dummy scan cells disposed prior to the electronic representative scan cells of the branched portion of the branched scan chain, and
whereby the dummy scan cells are connected to the electronic representative of the scan cells of the branched portion of the branched scan chain, such that the dummy scan cells are disposed to communicate therewith.

Claim 14 was rejected on the same grounds as claim 1. Accordingly, the rebuttals to the rejection of claim 1 are applicable to the rebuttals to the rejection of claim 14. Some portions of claim 14 that are not disclosed by Whetsel have been printed above in bold type.

As set forth above, Whetsel does not disclose branch portions as recited in claim 14. Rather, Whetsel discloses a plurality of separate parallel scan paths. Accordingly, Whetsel cannot disclose "the branched scan chain having scan cells in a parent portion and a branched portion" as claimed in claim 14. It follows that Whetsel cannot anticipate claim 14.

Based on the foregoing, the rejection of claim 14 has been overcome. The applicants request reconsideration of the rejection.

CLAIM 15

Claim 15 is dependent on claim 14 and is deemed allowable by way of its dependence and for other reasons. Therefore, the applications request that the rejection be withdrawn.

CLAIM 16

Claim 16 is printed as follows for convenience:

A system for setting up a test for a circuit device comprising:
a test pattern generator which receives input relative to a circuit device to be tested and which outputs a test pattern for testing the circuit device;
a tool which operates with the test pattern generator, the tool having:
means for identifying respective parent and branch portions of a scan chain of a circuit device, the scan chain having a scan input and a plurality of scan outputs and a plurality of scan cells; and
means for creating a model of the scan chain, including means for creating a dummy cell chain which includes the branch portion of the scan chain connected with one or more dummy cells and the scan input.

Claim 16 was rejected on virtually the same grounds as claim 1. Accordingly, the rebuttals to the rejection of claim 1 are applicable to the rebuttals to the rejection of claim 16. Some portions of claim 16 that are not disclosed by Whetsel have been printed above in bold type.

As set forth above, Whetsel does not disclose branch portions as recited in claim 16. Rather, Whetsel discloses a plurality of separate parallel scan paths. Accordingly, Whetsel cannot disclose "means for identifying respective parent and branch portions of a scan chain of a circuit device" as claimed in claim 16. It follows that Whetsel cannot anticipate claim 16.

Based on the foregoing, the rejection of claim 16 has been overcome. The applicants request reconsideration of the rejection.

CLAIM 17

Claim 17 is printed as follows for convenience:

A method for modeling test circuitry of a device comprising:
identifying respective parent and branch portions of a scan chain of the device, the scan chain having a plurality of scan cells and at least one scan input and a plurality of scan outputs; and
creating a model of the scan chain, the model comprising the parent portion of the scan chain, and dummy cells connected between the scan input and the branch portion of the scan chain.

Claim 17 was rejected on virtually the same grounds as claim 1. Accordingly, the rebuttals to the rejection of claim 1 are applicable to the rebuttals to the rejection of claim 17. Some portions of claim 17 that are not disclosed by Whetsel have been printed above in bold type.

As set forth above, Whetsel does not disclose branch portions as recited in claim 17. Rather, Whetsel discloses a plurality of separate parallel scan paths. Accordingly, Whetsel cannot disclose "identifying respective parent and branch portions of a scan chain of the device" as claimed in claim 17. It follows that Whetsel cannot anticipate claim 17.

Based on the foregoing, the rejection of claim 17 has been overcome. The applicants request reconsideration of the rejection.

CLAIM 18

Claim 18 is dependent on claim 17 and is deemed allowable by way of its dependence and for other reasons. Therefore, the applications request that the rejection be withdrawn.

CLAIM 19

Claim 19 is printed as follows for convenience:

A method for performing a test-related process for a circuit device comprising:

identifying respective parent and branch portions of an actual scan chain of a circuit device, the actual scan chain having a plurality of scan cells and at least one scan input and a plurality of scan outputs; and

creating a model of the scan chain, including creating a dummy cell chain which includes the branch portion of the scan chain connected with one or more dummy cells and the scan input.

Claim 19 was rejected on virtually the same grounds as claim 1. Accordingly, the rebuttals to the rejection of claim 1 are applicable to the rebuttals to the rejection of claim 19. Some portions of claim 19 that are not disclosed by Whetsel have been printed above in bold type.

As set forth above, Whetsel does not disclose branch portions as recited in claim 19. Rather, Whetsel discloses a plurality of separate parallel scan paths. Accordingly, Whetsel cannot disclose "identifying respective parent and branch portions of an actual scan chain of a circuit device" as claimed in claim 19. It follows that Whetsel cannot anticipate claim 19.

Based on the foregoing, the rejection of claim 19 has been overcome. The applicants request reconsideration of the rejection.

CLAIM 20

Claim 20 is dependent on claim 20 and is deemed allowable by way of its dependence and for other reasons. Therefore, the applications request that the rejection be withdrawn.

CLAIM 21

Claim 21 is printed as follows for convenience:

A method for testing a circuit device comprising:
using a model of a scan chain of a circuit device, including a parent portion and a dummy cell portion of the representative chain, the dummy cell portion including the branch portion of the scan chain connected with one or more dummy cells and a common scan input which is in common with the parent portion;
shifting test bits into a common scan input;
populating the parent and the dummy portions of the model which includes populating the branch portion of the scan chain; and
capturing a response to the test bits shifted into the scan input.

Claim 21 was rejected on virtually the same grounds as claim 1. Accordingly, the rebuttals to the rejection of claim 1 are applicable to the rebuttals to the rejection of claim 21. Some portions of claim 21 that are not disclosed by Whetsel have been printed above in bold type.

As set forth above, Whetsel does not disclose branch portions as recited in claim 21. Rather, Whetsel discloses a plurality of separate parallel scan paths. Accordingly, Whetsel cannot disclose "using a model of a scan chain of a circuit device, including a parent portion and a dummy cell portion of the representative chain" as claimed in claim 21. It follows that Whetsel cannot anticipate claim 21.

Based on the foregoing, the rejection of claim 21 has been overcome. The applicants request reconsideration of the rejection.

III. Rejection of Claims 4, 5, 9, 10, 12, and 13 Under 35 U.S.C. §103(a)

Claims 4, 5, 9, 10, 12, and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Whetsel (U.S. 6,519,729).

CLAIMS 4, 5, 9, 10, and 12

Claims 4, 5, 9, 10, and 12 are dependent on claim 1 and are deemed allowable by way of their dependence and for other reasons. Therefore, the applications request that the rejections be withdrawn.

CLAIM 13

Claim 13 is printed as follows for convenience:

A tool for use in a test process for a device, comprising:
 means for identifying respective parent and branch portions of a scan chain of the device; and
 means for creating a model of the scan chain, including:
 means for breaking the branch portion from the parent portion of the scan chain in the model;
 means for inserting one or more dummy cells in the branch chain prior to the existing cells in the branch chain; and
 means for re-connecting the branch chain with the inserted dummy cells to the scan input in the model of the scan chain.


As set forth above, Whetsel does not disclose branch portions of a scan chain as recited in claim 13. Accordingly, Whetsel cannot disclose "means for identifying respective parent and branch portions of a scan chain" as claimed in claim 13.

Based on the foregoing, Whetsel does not disclose all the elements of claim 13 and cannot render claim 13 obvious. The applicants therefore request reconsideration of the rejection.

Respectfully submitted,
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